

## Title (en)

Examination apparatus for biological sample and chemical sample

## Title (de)

Untersuchungsvorrichtung für biologische Proben und chemische Proben

## Title (fr)

Appareil d'examen pour échantillon biologique et échantillon chimique

## Publication

**EP 1950808 A2 20080730 (EN)**

## Application

**EP 08007071 A 20040903**

## Priority

- EP 04021003 A 20040903
- JP 2004012596 A 20040121

## Abstract (en)

A wireless sensor chip suitable for the compact, high-sensitive, and low-cost examination apparatus for easily examining a biological material such as gene at low cost is provided. A sensor chip is formed on an SOI substrate, and an n-type semiconductor layer on which a pMOS transistor is formed and a p-type semiconductor layer on which an nMOS transistor is formed are isolated by a pn junction. Therefore, the p-type semiconductor layer at the outermost portion (chip edge portion to be in contact with solution) is set to floating, and the maximum potential and the minimum potential of the chip are supplied to an n-type semiconductor layer and a p-type semiconductor layer inside the outermost portion, respectively. Also, the chip is covered with an ion impermeable insulating film for reducing the penetration of positive ions through the oxide layer.

## IPC 8 full level

**G01N 27/414** (2006.01); **H01L 21/768** (2006.01); **H01L 21/822** (2006.01); **H01L 21/8238** (2006.01); **H01L 23/522** (2006.01); **H01L 27/04** (2006.01); **H01L 27/08** (2006.01); **H01L 27/092** (2006.01); **H01L 27/12** (2006.01); **H01L 29/786** (2006.01)

## CPC (source: EP US)

**G01N 27/414** (2013.01 - US); **G01N 27/4148** (2013.01 - EP); **H01L 27/1203** (2013.01 - EP US); **H10K 30/671** (2023.02 - US)

## Citation (applicant)

- JP 2004012596 A 20040115 - RICOH KK
- JP 2002014072 A 20020118 - YAMATAKE CORP
- JP H06177233 A 19940624 - HITACHI LTD
- JP H06177242 A 19940624 - HITACHI LTD
- J. VAN DER SPIEGEL ET AL.: "The extended gate chemically-sensitive field effective transistor as multi species microprobe", SENSORS AND ACTUATORS, vol. 4, 1983, pages 291 - 298
- K. TSUKADA ET AL.: "An integrated micro multi-ion sensor using platinum-gate field effect transistors", PROC. INT. CONF. SOLID-STATE SENSORS AND ACTUATORS (TRANSDUCERS '91), SAN FRANCISCO, USA, 1991, pages 218 - 221

## Cited by

EP2527824A1; US9766195B2

## Designated contracting state (EPC)

DE FR GB IT

## Designated extension state (EPC)

AL HR LT LV MK

## DOCDB simple family (publication)

**EP 1557884 A2 20050727**; **EP 1557884 A3 20080625**; DE 602004030054 D1 20101223; EP 1950808 A2 20080730; EP 1950808 A3 20080917; EP 1950808 B1 20101110; JP 2005207797 A 20050804; JP 4065855 B2 20080326; TW 200525145 A 20050801; TW I345057 B 20110711; US 2005156207 A1 20050721; US 2008061323 A1 20080313; US 7888708 B2 20110215

## DOCDB simple family (application)

**EP 04021003 A 20040903**; DE 602004030054 T 20040903; EP 08007071 A 20040903; JP 2004012596 A 20040121; TW 93126366 A 20040901; US 93333904 A 20040903; US 97683107 A 20071029